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SUBJECT—

TITLE

SUMMARY
TARGHEE-TETON BARK BEETLE CONTROL PROJECT

by
James C. Evenden

Forest Insect Laboratory
Coeur d'Alene, Idaho
August 7, 1948

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SUMMARY

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History of Project

A severe infestation of the mountain pine beetle (Dendroctonus monticolae) was discovered within the lodgepole pine stands of the Caribou National Forest in August 1944. This infestation had been present for the past two or three years and had increased quite rapidly in severity during the previous two seasons. Subsequent surveys showed that on this forest approximately 25,000 trees had been attacked and killed by beetles during the summer of 1944. A complete cleanup of this situation was recommended, but with the funds available only 12,000 of the 25,000 trees were treated. An attempt was made to have small saw mill operators cut and mill infested trees for additional control. This effort was not successful. Although this control reduced the subsequent infestation proportionately, in 1945 the infestation on this forest increased to 40,000 infested trees.

The same year an infested area of 12,000 trees was found in the southern portion of the Teton National Forest, some 35 miles east of the Caribou outbreak. The origin of this outbreak is unknown. It could have started some 2 or 3 years previous through a flight of beetles from the Caribou infestation, or it is entirely possible and probable, that it developed locally. No funds were available for the control of these two situations in the fall of 1945 or the spring of 1946.

In September 1946, it was found that the beetles had spread northward into the southern portion of the Targhee National Forest, and along the west side of the Teton National Forest. Subsequent surveys showed

the 1946 loss on these two forests to be 60,000 trees. This information demonstrated that unless stopped the infestation would continue to spread northward, assuring the destruction of valuable commercial timber stands, as well as scenic forests of National Parks.

The potential seriousness of this infestation was, and is still considered as justifying every possible effort to prevent further destruction by these beetles. The most effective procedure would have been to treat all infested trees in all areas. To have accomplished this desired objective in 1947 would have been a tremendous task. Even if funds had been available, the physical difficulties associated with such an operation were considered as making it almost an impossibility. As a compromise to the desired procedure, the plan of control as adopted, called for holding a zone of defense across the front of this outbreak in which all infested trees were to be treated. In submitting this plan of control it was stated that under such a system of partial control (complete cleanup of all areas worked, but the leaving of the entire main infestation on the Caribou), we would be doomed to failure unless funds were provided for repeated work throughout the zone of defense for 3 or 4 years to come. This statement was based upon our realization that the treated areas would be reinfested until such time as the infestation on the Caribou no longer existed. By this plan we hoped that the same results could be accomplished.

In carrying out this operation there were 71,000 trees to be treated, which were distributed as follows:

Targhee National Forest	31,000	trees
Teton " "	30,000	"
Northern portion of the Caribou National Forest	8,000	"
Bridger National Forest	1,000	"
Grand Teton National Park	1,000	"

The cost of treating was set at $5.00 per tree, and the sum of $355,000 was requested, although a smaller sum was allotted. Although this reduced allotment did not permit the desired cleanup of all infested trees throughout the zone of defense, no irrecoverable losses of area occurred.

1948 Control Operation

Surveys conducted in the fall of 1947 indicated that within the zone of control, there were approximately 100,000 newly attacked trees. A few small areas of new infestation were found to the north of the zone of defense as established in 1946. This loss of area, although unfortunate, was not considered as serious. To treat this infestation

$495,000 were requested for national forest lands and $30,000 for the Grand Teton National Park and National Monument. These funds were made available and during the spring of 1948 the work was conducted as planned. The project started in early May and was completed in late July. All infested areas were covered by control with the exception of a portion of the northern boundary of the Caribou National Forest. The following statistics show the accomplishments of the 1948 control operation.

1.	Number of trees treated	103,200
	Burned standing with fuel oil in early spring	9,500
	Treated with penetrating spray (5 parts #2 Diesel oil - 1 part Orthodichlorobenzene)	93,700
2.	Gallons of fuel oil used for burning	19,900
	Gallons of fuel oil per tree	2.1
3.	Gallons of penetrating spray	174,100
	Gallons of penetrating spray per tree	1.9
4.	Approximate acreage covered by control	98,000
5.	Number of men employed at peak of project	506
6.	Number of pack horses at peak of project. (Used to transport spray in woods)	269
7.	Number of man days actual treating	11,920
8.	Number of man days spotting	5,550
9.	Total number of project man days	22,640
10.	Average number of trees treated per project man days.	4.6

In treating this infestation a penetrating spray was applied to the infested portion of the bole of standing trees. This spray penetrates the bark and kills the beetle broods beneath. In applying this spray different types of pumps were used. A portable power pump and a manually operated pressure pump were developed which gave satisfaction. Later in the season a small hand pump, weighing less than 5 pounds, was found to give the same satisfactory results as the heavier equipment. At the start of this operation a number of trees (9,500) were treated by spraying fuel oil upon the bole and then burning. Although effective this method cannot be used when fire becomes dangerous. In the execution of this project the work was conducted by the Forest Service and the Park Service, with the Bureau of Entomology and Plant Quarantine being responsible for technical phases.

The Future of Infestation

A thorough survey of the Teton, Targhee, Caribou and Bridger National Forests, and the Grand Teton and Yellowstone National Parks will be made during the month of August and September. Until this survey is completed we will not know the status of the 1948 situation. We expect a marked reduction in the severity of the infestation in all areas. Although it is expected that in 1949 there will be far less trees to be treated, there will still be a large acreage to cover. A report of the 1948 survey will be submitted as soon as the field work is completed.

Summary

The seriousness and potentials of mountain pine beetle epidemics in lodgepole pine forests cannot be over-emphasized. From 1911 to 1942 an epidemic of this insect swept through the lodgepole pine forests of Idaho and northwestern Montana, leaving a waste of dead trees. Not only were millions of trees destroyed, but a fire hazard was created which has and will continue to cost large sums of money in instances of forest fire suppression. Control efforts in connection with the Targhee-Teton infestation are directed to the prevention of a similar situation.

In considering the value of the timber stands at stake, one has no way of evaluating the scenic forests of the two national parks which lie immediately north of the present zone of defense. It is enough to say that these timber stands serve as a frame for the pictures of natural beauty within these two areas. The destruction of these scenic forests would leave scars requiring decades to heal.

It is not difficult to realize the value of commercial lodgepole pine forests threatened by this outbreak. Lodgepole pine is a valuable timber species and in the future bids fair to becoming even a more important forest product. The demand for telephone and power poles, mining timbers, etc., has placed lodgepole pine on a plane above many other forest tree species. The present price of lodgepole pine varies from $3.25 per thousand board feet for saw timber to as much as $31.60 per thousand board measure for power poles. In 1947 on the Targhee National Forest, $1,015 worth of pole material were sold from less than 10 acres of lodgepole pine timber. In connection with this sale only 22% of the total timber volume was removed. On the Gallatin National Forest thousands of cords of lodgepole pine pulp wood have and are now being removed. In many other places lodgepole pine is being used extensively. The destruction of the mature lodgepole pine throughout the Northern Rocky Mountain areas would be not only a tremendous economic loss, but would add materially to the cost of public and private forest administration.